



Steam Bioreactor Pilot

REFUSE
DISPOSAL
DIVISION

Background / Purpose: The City of San Diego, Environmental Services Department, Refuse Disposal Division has been very successful in working with the private sector through public-private partnerships on the landfill. This EMP partners with STI Engineering to test the concept of steam injection for bio-reactors in a landfill environment. This is a no-cost pilot project that could become the state-of-the-art technology in recovering landfill space, landfill gas, and minimizing risk and costs associated with current bio-reactor practices.

Objective: To determine the feasibility of steam injection bioreactor technology at the Miramar Landfill.

Related Significant Aspects: Daily Cover, Greens Program, Leachate Disposal

Target: Fifteen feet of settlement in control cell within the test period.

Target Completion Date(s): October 2005

Action Plan: See proposal

Responsible Person(s): STI Engineering

Resources Required: Landfill control cell (approximately one acre) in an area with trash between one to three years old.

Environmental Performance Indicator(s): Landfill settlement and increased methane gas generation at the test cell area.

Comments (including other expected benefits or cost savings):

Should this technology prove feasible and cost effective the City may be able to use it on the entire lined portion of the Miramar landfill to expedite the biodegradation process, thus significantly extending the landfill's life, and possibly decreasing the costs and the time associated with the post closure monitoring and management period. If allowed by the regulators, this technology may eventually be exported to unlined portions of the landfill and other closed sites.

Baseline Data: This is the initial pilot study to determine baseline performance data.

Prepared by: Mark zu Hone, Environmental Management Representative

Reviewed by: Assistant Deputy Director and Senior Staff

Approved by: Steven F. Fontana, Deputy Environmental Services Director



Steam Bioreactor Pilot Environmental Management Program

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EMP Schedule					
Step	Action Items	Responsibilities	Role	Schedule	Resources Required
1	Initial PPT testing and site layout	STI Engineering M. Thompson	Lead Support	May 05 Comp	Site access and regulatory approval
2	System Installation	STI Engineering	Lead Support	June 05 Comp	Supplied by STI
3	Operations and analysis	STI Engineering	Lead Support	June 05 Oct 05	Supplied by STI
4	Wrap up and demobilize	STI Engineering	Lead Support	Oct 05	Supplied by STI
5	Final Report submitted to the City	STI Engineering	Lead Support	Nov 05	Supplied by STI

Comments (report performance/milestones):

This is a six month pilot project designed to determine the feasibility of steam injection for bioreactors in a landfill. Three months for the steam injection process and up to three months to reach final settlement based on the effectiveness of the technology. STI Engineering is conducting this pilot in cooperation with the City of San Diego at no cost. Should this technology prove viable then a cost proposal for full scale implementation of the system will be submitted to the City for consideration.

Field operations issues including the filtration and steaming of leachate, scaling of piping and system right-sizing have delayed the continuous operation of the system to date. It is expected that these issues will be resolved by mid September and continuous steaming will be feasible by then. The STI team is currently working with a blend of landfill gas concentrate and leachate as their primary water source for steam generation. The blended product seems to have mitigated the particulate issues encountered with the leachate only option.